BRUHAT BANGALORE MAHANAGARA PALIKE
YELAHANKA DIVISION

Name of work:

Improvements to roads Drains and other Developmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.

SECOND AND FINAL BILL

TEST REPORTS

TEJUS CONSULTANTS
CONSULTING ENGINEERS AND DESIGNERS
No.58 MIG, 6th Cross, 3rd Main
1st Stage, Basaveshwaranagar
Bangalore-560079
☎ 080 - 23287532
email: tejusconsultants@gmail.com

TEJUS
CONSULTANTS

No.TC/BBMP/YNK-PMC/463/20-21 Date:

To
The Executive Engineer
Yelahanka Division
NH-7 Road, Bangalore – 560 092

Dear Sir

Sub: Improvements to roads Drains and other Developmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.

In reference to the above subject, this is to bring to your kind notice that we have scrutinized the **Second and Final bill** submitted by **M/S Benaka Developers and Projects Pvt Ltd** towards the above said work and arrived at an amount of **8,08,62,926.63 (Rupees Eight Crore Eight Lakhs Sixty-Two Thousand Nine Hundred and Twenty-Six and Sixty-Three Paise Only)** the work has been completed satisfactorily.

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This is for your kind information.

Thank you and assuring you the best of our Services at all the times

For Tejus Consultants
(Nischal M)

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhath Bangalore Mahanagara Palike
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Total Weight in gm:	3000

SIEVE ANALYSIS

Type of Material	40 mm down size	**Proposed Use**	PCC
Sample Location	3rd Main 2nd c/s Rd	**Date of Sampling**	16-09-2020
		Date of Testing	17-09-2020

IS Sieve Size	Weight Retained in gm	Cum. Weight Retained in gm	Cumulative Weight Retained in %	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA-2007) % of Passing For Graded Aggregate of Nominal Size
80.00mm	0	0	0.00	100.00	100
63.00mm	0	0	0.00	100.00	-
40.00mm	88	88	2.93	97.07	95-100
20.00mm	1400	1488	49.60	50.40	30-70
10.00mm	982	2470	82.33	17.67	10-35
4.75mm	460	2930	97.67	2.33	0-5
Pan	70	3000	100.00	0.00	

Remarks : ✓ Satisfactory / Not Satisfactory

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4.The material used in the site satisfied the standard of MORTH's 5th revision and hence can be used in the work.

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TEST REPORT	
Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	Tejus Consultants, Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SIEVE ANALYSIS

Total Weight:	3000 M sand			
Type of Material	M sand	Proposed Use	PCC	
Sample Location	3rd Main 2nd c/s Rd	Date of Sampling	17-09-2020	
		Date of Testing	17-09-2020	

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	212	212	7.07	92.93	90 - 100
2.36 mm	322	534	17.80	82.20	75 - 100
1.18 mm	426	960	32.00	68.00	55 - 90
0.600 mm	488	1448	48.27	51.73	35 -59
0.300 mm	752	2200	73.33	26.67	8-30
0.150 mm	630	2830	94.33	5.67	0 - 10
Pan	170	3000			-

Remarks : ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike				
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.				
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalor				
Contractor	M/S Benaka Developers and Projects Pvt Ltd				
Total Weight:	10000	gms			

SIEVE ANALYSIS

Type of Material	20 mm down size		**Proposed Use**	Concrete	
Sample Location	At Plant		**Date of Sampling**	21-09-2020	
			Date of Testing	22-09-2020	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing**
40.00 mm	0	0	0	100	100
20.00 mm	258	258	2.58	97.42	95 - 100
10.00 mm	4780	5038	50.38	49.62	25 - 55
4.75 mm	4355	9393	93.93	6.07	0 - 10
Pan	607	10000			

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample	Ch:52 RHS, 3rd main 5th c/s Road (For Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	30-09-2020	07-10-2020	7 days	8.144	22500	311	13.82	13.73
2	30-09-2020	07-10-2020	7 days	8.159	22500	307	13.64	
3	30-09-2020	07-10-2020	7 days	8.190	22500	309	13.73	

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike	
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.	
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore	
Contractor	M/S Benaka Developers and Projects Pvt Ltd	
Total Weight:	10000	gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	At Plant	**Date of Sampling**	23-10-2020
		Date of Testing	24-10-2020

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	268	268	2.68	97.32	95 - 100
10.00 mm	4788	5056	50.56	49.44	25 - 55
4.75 mm	4328	9384	93.84	6.16	0 - 10
Pan	616	10000			

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Remarks : Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Ch:95 RHS, Prakash Theater Road (For Side Wall)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	30-10-2020	27-11-2020	28days	8.166	22500	502	22.31	22.44
2	30-10-2020	27-11-2020	28days	8.175	22500	503	22.36	
3	30-10-2020	27-11-2020	28days	8.183	22500	510	22.67	

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	Tejus Consultants, Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SIEVE ANALYSIS

Total Weight:	3000 gms		
Type of Material	M sand	**Proposed Use**	PCC
Sample Location	Vinivink Shastri 1st Main Road	**Date of Sampling**	22-12-2020
		Date of Testing	22-12-2020

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing (Zone-II)
10.00 mm	0	0	0	100.00	100
4.75 mm	222	222	7.40	92.60	90 - 100
2.36 mm	315	537	17.90	82.10	75 - 100
1.18 mm	420	957	31.90	68.10	55 - 90
0.600 mm	488	1445	48.17	51.83	35 -59
0.300 mm	733	2178	72.60	27.40	8-30
0.150 mm	630	2808	93.60	6.40	0 - 10
Pan	192	3000			-

Remarks : Satisfactory / Not Satisfactory

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Ch:102, RHS, Vinivink Shastri 1st Main Road (For Raft)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	28-12-2020	25-01-2021	28days	8.148	22500	505	22.44	22.59
2	28-12-2020	25-01-2021	28days	8.166	22500	509	22.62	
3	28-12-2020	25-01-2021	28days	8.193	22500	511	22.71	

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Grade of concrete:	M20
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location	Ch:60, RHS, Vinivink Shastri 3rd c/s Road (For Sidewall)

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	02-01-2021	09-01-2021	7 days	8.144	22500	304	13.51	13.61
2	02-01-2021	09-01-2021	7 days	8.157	22500	305	13.56	
3	02-01-2021	09-01-2021	7 days	8.169	22500	310	13.78	

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KERB STONE (CORE) TEST REPORT

Name of Work	:	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	:	Bruhat Bengaluru Mahanagara Palike
Contractor	:	M/S Benaka Developers and Projects Pvt Ltd
Consultant	:	Tejus Consultants, Bangalore
No.of Sample Tested	:	3
Date of Testing	:	11-01-2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M15

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength
1	50.00	85.00	0.392	2348.75	1.70	0.960	29.62	15.09	16.29	15.64	19.55
2	50.00	85.00	0.366	2192.97	1.70	0.960	29.82	15.19	16.40	15.75	19.68
3	50.00	85.00	0.381	2282.84	1.70	0.960	29.80	15.18	16.39	15.74	19.67

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Consultants Representative

GRADATION FOR GSB
(As per MORT&H 400-1,Grading-II)

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	TEJUS CONSULTANTS
Contractor	:	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing	:	17-01-2021
Type of Mix	:	GSB
Sample I/D	:	GSB2

Sample Location:	Ragavendra Swamy Temple Road	**Date of Sampling:**	16-01-2021	
		Date of testing:	17-01-2021	
Type of material & Purpose:	GSB	**Oven Dry Wt.(gms):**	10000.0	

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
75	0	0	0.00	100.00	-
53	0	0	0.00	100.00	100.00
26.5	2218	2218	22.18	77.82	70-100
9.5	2512	4730	47.30	52.70	50-80
4.75	862	5592	55.92	44.08	40-65
2.36	1200	6792	67.92	32.08	30-50
0.425	1940	8732	87.32	12.68	10-15
0.075	833	9565	95.65	4.35	<5
Pan	435.0				
Total	10000.0				

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Authorised Signatory

TEJUS CONSULTANTS

Name of Work	:	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	:	Bruhat Bengaluru Mahanagara Palike
Consultant	:	TEJUS CONSULTANTS, BANGALORE
Contractor	:	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing	:	18-01-2021
Type of Mix	:	WMM
Sample I/D	:	WMM 1

GRADATION FOR WMM
(As per MORT&H 400-11)

Sample Location:	Alpha School Road	Date of Sampling:	17-01-2021
		Date of testing:	18-01-2021
Type of material & Purpose:	WMM	Oven Dry Wt.(gms):	10000.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
53	0	0	0.00	100.00	100.00
45	375	370	3.70	96.30	95-100
22.4	1798	2168	21.68	78.32	60-80
11.2	2252	4420	44.20	55.80	40-60
4.75	2018.0	6438	64.38	35.62	25-40
2.36	1390.0	7828	78.28	21.72	15-30
0.6	774.0	8602	86.02	13.98	8.0-22.0
0.075	882.0	9484	94.84	5.16	0-8
Pan	516.0	10000			
Total	10000.0				

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Consultant's Representative

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TEST REPORT

Clients	BRUHAT BENGALORE MAHANAGARA PALIKE
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	**Proposed Use**	concrete
Location/Source	At Plant	**Date of Sampling**	18-01-2021
Period of Soaking	24 hours	**Date of Testing**	19-01-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	667	651	643	
B	Weight of oven - dry sample gm.	659	642	635	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1694	1684	1679	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.657	2.653	2.657	2.656
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.214	1.402	1.260	1.292

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Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SPECIFIC GRAVITY AND WATER ABSORPTION

FINE AGGREGATE (IS-2386-PART-3)

Type of Material	M sand	**Proposed Use**	concrete
Location/Source	At Plant	**Date of Sampling**	23-01-2021
Period of Soaking	24 hours	**Date of Testing**	24-01-2021

Sl. No.	Test Property	TRIAL - 1	TRIAL - 2	TRIAL - 3	
A	Weight of sturated surface dry sample gm.	643	666	658	
B	Weight of oven - dry sample gm.	635	658	649	
C	Weight of Pycnometer Filled with water gm	1275	1275	1275	
D	Weight of Pycnometer + sample + water gm	1679	1693	1689	
E	Bulk specific gravity $\frac{B}{(C+A-D)}$	2.657	2.653	2.660	2.657
G	Absorption (%) $\frac{(A-B)*100}{B}$	1.260	1.216	1.387	1.287

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FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Project :	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor:	M/S Benaka Developers and Projects Pvt Ltd

Type of Material	BC	**Proposed Use**	BC
Sample Location	At plant	**Date of Sampling**	28-01-2021
		Date of Testing	28-01-2021

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	792	65	942	71
16.0	12.5	1392	136	1205	111
12.5	10.0	509	75	452	65
10.0	6.3	495	59	446	71
Total		3188	335	3045	318

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.51
Elongation Index(%):	10.44
Combined FI+EI, (%)	20.95

AE-1

Note:
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Authorised Signatory

TEJUS CONSULTANTS

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

FLAKINESS AND ELONGATION INDICES (IS 2386, PART I)

Type of Material	DBM	Proposed Use	DBM
Sample Location	At plant	Date of Sampling	01-02-2021
		Date of Testing	01-02-2021

Size of aggregate		Flakiness Index		Elongation Index	
Passing through IS sieve, mm	Retained on IS sieve, mm	Total wt. of aggregate retained on sieves (A) gms.	Wt. of aggregate passing from Flakiness gauge (B) gms	Wt. of aggregate retained on Flakiness gauge (C) gms	Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	7393	670	7052	342
31.5	25.0	4133	249	3634	275
25.0	20.0	2455	259	1905	235
20.0	16.0	1544	329	925	255
16.0	12.5	592	108	459	189
12.5	10.0	486	66	280	85
10.0	6.3	129	75	65	62
Total		16732	1756	14320	1443

Results

Flakiness Index(%):	10.49
Elongation Index(%):	10.08
Combined FI+EL (%)	20.57

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Consultant's Representative

TEST REPORT

TEJUS CONSULTANTS

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads Drains anf other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Total Weight:	10000 gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	At Plant	**Date of Sampling**	28-02-2021
		Date of Testing	01-03-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	266	266	2.66	97.34	95 - 100
10.00 mm	4988	5254	52.54	47.46	25 - 55
4.75 mm	4312	9566	95.66	4.34	0 - 10
Pan	434	10000			

Remarks : ✓ Satisfactory / Not Satisfactory

AE-1
A.E.E

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Consultant's Representative

Test Report on Compressive Strength of Concrete Cubes

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No.01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location:	vinivink Shastri 2nd Cross Road at CH:40

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	03-03-2021	10-03-2021	7 days	8.179	22500	449	19.96	19.78
2	03-03-2021	10-03-2021	7 days	8.209	22500	444	19.73	
3	03-03-2021	10-03-2021	7 days	8.214	22500	442	19.64	

Remarks : A.E.E.E ✓ Satisfactory / Not Satisfactory

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Consultant's Representative

TEJUS
CONSULTANTS

TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads Drains anf other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Total Weight:	10000 gms

SIEVE ANALYSIS

Type of Material	20 mm down size	**Proposed Use**	Concrete
Sample Location	At Plant	**Date of Sampling**	04-03-2021
		Date of Testing	05-03-2021

IS Sieve Size	Weight Retained	Cum. Weight Retained	Cum. % Retained	Cum. % Passing	Spec. Limit (%) Passing
40.00 mm	0	0	0	100	100
20.00 mm	281	281	2.81	97.19	95 - 100
10.00 mm	4882	5163	51.63	48.37	25 - 55
4.75 mm	4312	9475	94.75	5.25	0 - 10
Pan	525	10000			

Remarks : AE-1 ✓ Satisfactory / Not Satisfactory

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TEST REPORT

Clients	Bruhat Bangalore Mahanagara Palike
Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Consultants	TEJUS CONSULTANTS Basaveshwar Nagar Bangalore
Contractor	M/S Benaka Developers and Projects Pvt Ltd

SIEVE ANALYSIS

Total Weight:	3000	gms			
Type of Materia	M sand		**Proposed Use**	Concrete	
Sample Location	At Plant		**Date of Sampling**	27-03-2021	
			Date of Testing	27-03-2021	
IS Sieve Size	**Weight Retained**	**Cum. Weight Retained**	**Cum. % Retained**	**Cum. % Passing**	**Spec. Limit (%) Passing (Zone-II)**
10.00 mm	0	0	0	100.00	100
4.75 mm	231	231	7.70	92.30	90 - 100
2.36 mm	282	513	17.10	82.90	75 - 100
1.18 mm	418	931	31.03	68.97	55 - 90
0.600 mm	571	1502	50.07	49.93	35 -59
0.300 mm	744	2246	74.87	25.13	8-30
0.150 mm	532	2778	92.60	7.40	0 - 10
Pan	222	3000			-

Remarks : AE-1 ✓ Satisfactory / Not Satisfactory

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Consultant's Representative

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TEJUS
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Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	DBM	Date of Sampling	02-04-2021
Sample Location	At plant	Date of Testing	02-04-2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	381.00	369.00	375.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	295.00	285.00	290.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	86.00	84.00	85.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.57	22.76	22.67	
5	Average Aggregate impact value	(%)	22.67			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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TEJUS
CONSULTANTS

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work :	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	07-04-2021
Type of Mix :	BC
Sample I/D :	BC3

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	953	897
2. Weight of Mixture after extraction, g	903	850
3. Weight of Bitumen	50	47
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	1.60	2.00
7. Weight of Bitumen & fines	51.60	49.00
8. Bitumen content in %	5.41	5.46
9. Average Bitumen content in %	5.44	
10. Minimum Bitumen content in %	5.40	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	Doctor Yogish House Road	Date of Sampling:	07-04-2021
Type of material & Purpose:	BC	Date of testing:	07-04-2021
		Oven Dry Wt.(gms):	903.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	80	80.0	8.86	91.14	79 - 100
9.50	103	183.0	20.27	79.73	71 - 95
4.75	130	313.0	34.66	65.34	53 - 71
2.360	125	438.0	48.50	51.50	42 - 58
1.180	103	541.0	59.91	40.09	34 - 48
0.600	77	618.0	68.44	31.56	26 - 38
0.300	80	698.0	77.30	22.70	18 - 28
0.150	66	764.0	84.61	15.39	12 - 20
0.075	72	836.0	92.58	7.42	4 - 10
Pan	67.0				
Total	903.0				

A.E.E

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TEJUS
CONSULTANTS

DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	12-04-2021
Type of Mix :	Tack coat
Sample I/D :	6
Location :	24th Cross Road

Determination	Unit	Test No		
		1	2	3
Loacation	Chainage	@80	@162	@210
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.768	0.812	0.784
Final weight of plate after application of tack Coat (c)	Kg	0.791	0.835	0.807
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.252
Average	Kg/sq m	0.251		
Specified Limit	Kg/sq.m	0.250 Kg/sq.m		

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DETERMINATION OF RATE OF SPREAD TACK COAT

Name of Work :	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client :	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant :	TEJUS CONSULTANTS, BANGALORE
Contractor :	M/S Benaka Developers and Projects Pvt Ltd
Date of Testing :	13-04-2021
Type of Mix :	Tack coat
Sample I/D :	6
Location	24th Cross Road

Determination	Unit	Test No		
		1	2	3
Location	Chainage	@78	@140	@205
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.811	0.788	0.792
Final weight of plate after application of tack Coat (c)	Kg	0.834	0.811	0.815
Weight of tack Coat (d=c-b)	Kg	0.023	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.251	0.251	0.251
Average	Kg/sq.m	0.251		
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**		

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Client	Bruhat Bengaluru Mahanagara Palike
Consultant	TEJUS CONSULTANTS, BANGALORE
Contractor	M/S Benaka Developers and Projects Pvt Ltd

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	WMM	**Date of Sampling**	**22-04-2021**
Sample Location	KTM Show Room Road	**Date of Testing**	**23-04-2021**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	377.00	354.00	339.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	285.00	268.00	256.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	92.00	86.00	83.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	24.40	24.29	24.48	
5	Average Aggregate impact value	(%)	24.39			Max - 30 %

Remarks : AE-1 J.E.-A ✓ Satisfactory / Not Satisfactory

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AGGREGATE IMPACT VALUE
(IS: 2386 Part - 4)

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.		
Client	BRUHAT BANGALORE MAHANAGARA PALIKE		
Consultant	TEJUS CONSULTANTS, BANGALORE		
Contractor	M/S Benaka Developers and Projects Pvt Ltd		
Proposed Use	BC	**Date of Sampling**	25-04-2021
Sample Location	At plant	**Date of Testing**	25-04-2021

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	369.00	390.00	357.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	275.00	289.00	267.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	94.00	101.00	90.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	25.47	25.90	25.21	
5	Average Aggregate impact value	(%)	25.53			Max - 30 %

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TEJUS CONSULTANTS

Authorised Signatory

Test Report on Compressive Strength of Concrete Cubes

TEJUS CONSULTANTS

Project	Improvements to roads Drains and other Devlopmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.
Client	Bruhat Bangalore Mahanagar Palike
Consultant	TEJUS CONSULTANTS
Contractor	M/S Benaka Developers and Projects Pvt Ltd
Sample ID	Cement (ACC Cement) OPC 43 Grade
Grade of concrete:	M30
Size of cube:	150x150x150 mm
Reference IS code:	IS:516-1959
Sample Location:	1st Cross Road in 24thC-cross road at CH:16

Sl.No.	Date of Casting	Date of testing	Age of Test	Weight of Cube	Area of Cube	Failure load	Compressive strength	Avg. Compressive strength
				Kg	mm^2	KN	N/mm^2	N/mm^2
1	27-04-2021	25-05-2021	28 days	8.212	22500	702	31.20	31.21
2	27-04-2021	25-05-2021	28 days	8.192	22500	705	31.33	
3	27-04-2021	25-05-2021	28 days	8.184	22500	700	31.11	

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Project	Improvements to roads Drains and other Developmental Works in Maruthinagara Ward No 01 Under SWM Head in Chief Nava Nagarottana Grant of Yelahanka Division Package - 05.	
Client	Bruhat Bengaluru Mahanagara Palike	
Consultant	TEJUS CONSULTANTS, BANGALORE	
Contractor	M/S Benaka Developers and Projects Pvt Ltd	
Field Dry Density test by Sand Replacement Method (As per IS 2720 (Part 28)		
	Date:	**28-04-2021**
Layer no. or level	WMM I layer	
Depth of hole	200mm	
Field density:	**1**	**2**
Chainage	**KTM Show Room Road at Ch:65**	**KTM Show Room Road at Ch:140**
Wt. of wet material from hole (Ww) gms.	5976	5990
Wt. of sand+cylinder before pouring (w1) gms.	15000	15000
Wt. of sand+cylinder after pouring (w2) gms.	10597	10598
Wt. of sand in hole+ cone (w3) gms.	4403	4402
Wt. of cone gms.	1080	1080
Wt. of sand gms.	3323	3322
Bulk density of sand (ys)gm/cc	1.32	1.32
Bulk density of material(i.e. wt. of the wet material) (yb)=(Ww/w4*(ys))gm/cc	2.37	2.38
Moisture meter reading(moisture content)	6.30	6.30
Result		
FDD(Wt.of the dry material)=(100γb/100+mc)gm/cc	2.23	2.24
MDD	2.27	2.27
OMC	6.10%	6.10%
% compaction obtained	98.38	98.64
% compaction required	98%	98%

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